Complete Summary

GUIDELINE TITLE

Energy intake in children.

BIBLIOGRAPHIC SOURCE(S)

Hodson E. Energy intake in children. Nephrology 2005 Dec;10(S5):S204-6.

Hodson E. Energy intake in children. Westmead NSW (Australia): CARI - Caring for Australasians with Renal Impairment; 2005 Jan. 6 p. [14 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Chronic kidney disease
- End-stage kidney disease

GUIDELINE CATEGORY

Management
Treatment

CLINICAL SPECIALTY

Family Practice
Nephrology

Nutrition
Pediatrics

INTENDED USERS

Dietitians
Physicians

GUIDELINE OBJECTIVE(S)

To review the available evidence for the benefits and adverse effects of recommended energy intake in children with chronic kidney diseases or end-stage kidney disease

TARGET POPULATION

Children with chronic kidney disease or end-stage kidney disease

INTERVENTIONS AND PRACTICES CONSIDERED

Maintenance of recommended energy intake via oral feeding, nasogastric feeding, gastrostomy feeding, and intradialytic parenteral nutrition was considered but not recommended.

MAJOR OUTCOMES CONSIDERED

- Glomerular filtration rate
- Growth rate
- Nutritional status
- Weight gain
- Body mass index
- Peritonitis rate

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Databases searched: Medline (1996 to November Week 2 2003) and Embase (1980 to November 2003). MeSH terms for kidney disease were combined with MeSH terms and text words for energy intake. The Cochrane Renal Group Specialized Register of randomized controlled trials was also searched for relevant trials not indexed in Medline.

Date of searches: 1 December 2003.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Recommendations of Others. Recommendations regarding energy intake in children with kidney disease from the following groups were discussed: Kidney Disease Outcomes Quality Initiative, British Renal Association, Canadian Society of Nephrology, and European Best Practice Guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the levels of evidence (I–IV) can be found at the end of the "Major Recommendations" field.

Guideline

No recommendations possible based on Level I or II evidence

Suggestions for Clinical Care

(Suggestions are based on Level III and IV sources)

- Children with chronic kidney disease (CKD) or end-stage kidney disease (ESKD) should have an energy intake (orally) equivalent to the recommended energy intake (REI) of healthy children (50th percentile for height) of the same chronological age to allow for catch-up growth. An alternative is to calculate energy intake for the child's height age and to provide additional energy to allow for catch-up growth.
- If this energy intake cannot be maintained consistently with oral feeding, the child should receive nasogastric or gastrostomy feeds.
- Resting energy expenditure (REE) appears to be similar in children with CKD to that of healthy children. Measurement of REE using indirect calorimetry in 7 children with CKD and glomerular filtration rate (GFR) < 30 mL/min/1.73 m^2 indicates that mean REE was 98.1% of that predicted. REE have not been measured in children with ESKD.
- Increasing energy intake to 100% of REI in CKD and ESKD, using nasogastric or gastrostomy feeds if necessary, can improve or stabilise growth rates, particularly in infants treated before 2 years of age and before dialysis. However, data from the North American Pediatric Renal Transplant Cooperative study found no difference in weight and height standard deviation score (SDS) between children who did and those who did not receive supplemental feeds when aged < 5 years on dialysis. No data on achieved REI were reported.

- Increasing energy intake by intradialytic parenteral nutrition administered for 5 months results in reversal of weight loss and weight gain and improved body mass index (BMI).
- Increasing energy intake has been associated with a 55% decline in days of hospitalisation and a reduction in peritonitis from 1 episode per 8 patient months to 1 episode per 23 patient-months compared with rates before nutritional supplementation was commenced.
- Peritonitis rates in dialysis patients does not increase following gastrostomy tube insertion.
- Net glucose absorption from peritoneal dialysis fluid contributes 7% to 8% of total energy intake. This additional energy intake should be considered in the calculation of total energy intake in children who become overweight (BMI > 85th percentile of height age) on peritoneal dialysis.

Definitions:

Levels of Evidence

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from at least one properly designed RCT

Level III: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test or pretest/post-test

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Maintenance of adequate energy intake in children with chronic kidney disease (CKD) or end-stage kidney disease (ESKD)

- Improved or stabilized growth rates, particularly in infants treated before 2 years of age and before dialysis
- Reversal of weight loss and weight gain and improved body mass index
- Decline in days of hospitalisation and a reduction in peritonitis

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2005 Dec

GUIDELINE DEVELOPER(S)

Caring for Australasians with Renal Impairment - Disease Specific Society

SOURCE(S) OF FUNDING

Industry-sponsored funding administered through Kidney Health Australia

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Author: Elisabeth Hodson

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All guideline writers are required to fill out a declaration of conflict of interest.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Caring for Australasians with Renal Impairment Web site.

Print copies: Available from Caring for Australasians with Renal Impairment, Locked Bag 4001, Centre for Kidney Research, Westmead NSW, Australia 2145

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- The CARI guidelines. A guide for writers. Caring for Australasians with Renal Impairment. 2006 May. 6 p.

Electronic copies: Available from the Caring for Australasians with Renal Impairment (CARI) Web site.

PATIENT RESOURCES

None available

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